SUPPLEMENTAL VIDEOS

(All video are MP4 files in H.264 720p format optimized for replay using QuickTime)

Video S1. Supplemental video of 2-valve lymphatic vessel response to P_{out} ramp in **Fig. 1**. P_{in} is input pipette pressure, P_{out} is output pipette pressure, P_L is intraluminal pressure. Traces are same as shown in Fig. 1 except for the omission of the net densitometer traces and the color of the pre-valve diameter trace, which is blue in the video and black in Figure 1. The top traces are the digital valve positions (i.e. the net densitometer trace for each valve after thresholding). Replay is ~2x real time. Diameter scale is in μm, pressure scale is in cmH_2O, for valve position 1=open, 0=closed.

Video S2. Confocal valve reconstruction with 360^o rotation. Rat mesenteric lymphatic vessel with a single valve. Replay is ~2x real time.

Video S3. Video showing valve closure test for the 1-valve lymphatic vessel in **Figure 4**. Traces are the same as shown in **Figure 4**. Replay is ~2x real time. P_{in} is input pipette pressure, P_{out} is output pipette pressure. Diameter scale is in μm, pressure scale is in cmH_2O; valve trace is a single densitometer window (arbitrary units).

Video S4. Video showing multiple red blood cells moving backwards though an open valve when $P_{out}>P_{in}$. P_{in} is input pipette pressure, P_{out} is output pipette pressure. Diameter scale is in μm, pressure scale is in cmH_2O; valve trace is a single densitometer window (arbitrary units). Replay is ~2x real time.

Video S5. Video of valve opening test for the 1-valve lymphatic vessel in **Figure 5**. Traces are the same as shown in **Figure 5**. P_{in} is input pipette pressure, P_{out} is output pipette pressure. Diameter scale is in μm, pressure scale is in cmH_2O; valve trace is a single densitometer window (arbitrary units). Replay is ~2x real time.

Video S6. Video of valve leaflets in a 1-valve lymphatic segment fluttering during imposed large-amplitude pressure oscillation during a P_{out} ramp when the vessel (and presumably valve leaflets) are near-maximally distended. P_{in} is input pipette pressure, P_{out} is output pipette pressure. Diameter scale is in μm, pressure scale is in cmH_2O; valve trace is a single densitometer window (arbitrary units). Replay is ~2x real time.

Video S7. Video of lymphocytes transiently moving backward through an open valve at an undefined adverse pressure gradient in vivo (rat mesentery). A saline infusion was administered via the femoral vein 20 minutes prior to image collection at a rate of 0.2 ml/min/100g body weight for volume expansion. The valve was observed to stay open for longer durations and allowed significant backflow at flow rates of the same magnitude as forward flow. The valve leaflets can be seen at the very bottom edge of the image. Average vessel diameter ~80 μm. Replay is ~2x real time.